

Claims

- [c1] 1.A solid oxide fuel cell comprising an electrode layer applied to an electrolyte layer wherein the electrode layer is not contiguous but rather is formed from a plurality of substantially discrete elements separated by substantially uniform gaps.
- [c2] 2.The solid oxide fuel cell of claim 1 wherein the discrete elements are polygonal in shape.
- [c3] 3.The solid oxide fuel cell of claim 2 wherein the polygonal discrete elements are hexagonal in shape.
- [c4] 4.The solid oxide fuel cell of claim 3 wherein said hexagons are regular hexagons.
- [c5] 5.The solid oxide fuel cell of claim 1 further comprising a contact paste layer applied to the electrode layer.
- [c6] 6.The solid oxide fuel cell of claim 5 wherein the contact paste layer is lanthanum cobaltate.
- [c7] 7.The solid oxide fuel cell of claim 6 wherein the contact paste layer is not sintered prior to use.
- [c8] 8.The solid oxide fuel cell of claim 1 wherein the gaps take up less than about 5% of the surface area of the electrode.
- [c9] 9.The solid oxide fuel cell of claim 8 wherein the gaps take up less than about 2% of the surface area of the electrode.
- [c10] 10.The solid oxide fuel cell of claim 9 wherein the gaps take up less than about 1% of the surface area of the electrode.
- [c11] 11.A solid oxide fuel cell comprising an electrode layer applied to an electrolyte layer wherein the electrode layer is not contiguous but rather is formed from a plurality of substantially discrete hexagonal elements separated by substantially uniform gaps, wherein the gaps take up less than

about 2% of the surface area of the electrode.

- [c12] 12.A method of applying an electrode layer to an electrolyte layer in a SOFC comprising the steps of:
- (a) providing a screen defining a pattern comprising a plurality of discrete elements;
 - (b) screen printing an electrode paste through the screen and onto the electrolyte such that the resulting electrode layer comprises a plurality of discrete elements which are separated by substantially uniform and narrow gaps;
 - (c) sintering the electrode layer.
- [c13] 13.The method of claim 11 further comprising the step of adding a contact paste layer over the electrode layer.
- [c14] 14.The method of claim 11 wherein the discrete elements have a regular hexagonal shape and the pattern comprises a honeycomb array of elements.

096344-00001